

Work Order ID 155269

Thursday, January 12, 2017 11:33:20 AM

155269

Page 1

Item ID: 646.3511

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Strut

Start Date: 1/16/2017 Start Qty: 4.00

4

Cust Item ID:

Required Date: 1/23/2017 Req'd Qty: 4.00

4

Customer:

Reference:

Approvals: Process Plan:

DAS
21
9-89

Date: JAN 12 2017

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

646.3500

N/C 3

110

0.00

110

Waterjet

0.03

FLOW CNC Waterjet

Memo

1-Cut 646.3500 plate 2.75"x 1.50" as per Dwg

Dwg Rev: _____

Prog Rev: _____

2-Deburr if necessary

⑥

ac 17/01/15

120

QC2- Inspect parts off machine FAI/FAIB

0.00

120

QC

Memo

0.01

Quality Control

⑥

ac 17/01/15

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
							Completed By		
							Lead hand / Supervisor Approval Verification		
							QC / QA Coordinator Approval		

Root Cause				FAULT CATEGORY			
Environment ☐	☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	
Design ☐	☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	
Doc/Data ☐	☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	
Equip/Tooling ☐	☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	
Handling/Pre ☐	☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	
Material ☐	☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	
Internal Transport ☐	☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	
Tribal Knowledge ☐	☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	
LOA ☐	☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	
Substation ☐	☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	
Past Expiry Date ☐	☐	Manufacturing Process ☐	OTHER : _____				
Misidentified ☐	☐	Past Due ☐					

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Stop ***NR2*****Sequence ID/
Work Center ID****Operation
Description****Set Up/
Run Hours**

Tool ID

Tool #

Plan
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QtyReject
QtyReject
NumberInsp.
Stamp

130

QC8- Inspect parts - second check

0.00

130

QC

Memo

0.01

Quality Control

DAS

38

+89

JAN 16 2017

140

0.00

140

Small Fab

Memo

0.15

Small Fab

1- Fabricate tube as per dwg
USE DT10290 PUNCH

⑥

OK

17-02-23

150

QC5- Inspect part completeness to step on W/O

0.00

150

QC

Memo

0.01

Quality Control

DAS

38

+89

FEB 23 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

Weld per dwg A/R S.S. rod Batch: **4134442**

0.00

160

Large Fab

Memo

0.18

Large Fab

Weld tube to plate as per dwg. DT9867
Weld end were tube is punch.

6

17/02/24

170

QC9- Inspect visual per QSI004- Fusion Welds

0.00

170

QC

Memo

0.00

Quality Control

6

17.02.27

PD

180

QC5- Inspect part completeness to step on W/O

0.00

180

QC

Memo

0.01

Quality Control

6

17.02.27

PD

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NR1

QC:

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NR2

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Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

220

220

SprayPaint

Spray Painting

Memo

Prime as per dwg (see note 3)

Batch: 136615

0.00

0.03

DAS

41

9-89

17-2-27

230

230

QC

Quality Control

QC14- Inspect Spray Paint

Memo

0.00

0.01

DAS

38

9-89

FEB 28 2017

240

240

Packaging

Packaging

Memo

IDENTIFY AS PER APICAL MPP-120 BY STAMPING THE P# AND REV

0.00

0.00

DAS

6

9-89

MAR 03 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Page 5

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N900040100

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Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

250

QC21- Final Inspection - Work Order Release

0.00

250

QC

Memo

0.07

Quality Control

17/3/2 

DAS
21
9-89

MAR 02 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Part Lost/Missing ☐																																																																									
Part Moved ☐																																																																									
Drawing ☐																																																																									
Finish ☐																																																																									
Misread ☐																																																																									
Turning Sequence ☐																																																																									
OTHER :																																																																									

Picklist Print

Thursday, January 12, 2017 11:33:26 AM

Work Order ID: 155269

155269

Parent Item: 646.3511

646 3511

Parent Item Name: Strut

Start Date: 1/16/2017

Required Date: 1/23/2017

Start Qty: 4.00

Required Qty: 4.00

Comments: IPP REV:A 12.10.19 NEW ISSUE DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M304S16GA		Purchased	No				sf	110.5700		0.117053			

M304S16GA

304/316 Sheet .063

**

2/17/01/15

Location	Loc Qty	Loc Code
MAT010	110.57	
m134604	5	
m136036	34.97	
m136327	70.6	

M304TR0.500W.049

Purchased

No

f

95.9916

3.507368

M304TR0 500W 049

304 RD Tube .500 x .049W

**

OXC 17/02/21

Location	Loc Qty	Loc Code
GA002	95.991573	
M127937	1.1741	
M132872	8.271736	
M135325	8.651	
M136569	77.894737	

~~2.033~~
4.25

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
							Completed By		
							Lead hand / Supervisor Approval Verification		
							QC / QA Coordinator Approval		

Root Cause				FAULT CATEGORY							
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved	☐
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing	☐
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish	☐
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread	☐
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____							
Misidentified	☐	Past Due	☐								

APICAL

INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.

04274

SHEET 1 OF 1

DWG NO. 646.3500

REV: NC

PREPARED BY J. SOTO

DATE: 12/02/2013

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE: STRUT

APPROVED BY:

ENGR *[Signature]*

MFG

[Signature]

QC

[Signature]

EFF. NEXT ORDER

TRANSACTION CODES (TC):
A-ADD C-CREATE
R-REVISE D-DELETE

REASON: REVISED DELTA NOTE 1 & 2.

SHEET 1, ZONE A1 IS:

IS

NOTES:

- 1 MATERIAL: AISI 304/ 316 SS SHEET .062 THK
(REF DART SPEC. M304S16GA)
- 2 MATERIAL: AISI 304/316 SS 0.500 OD X 0.049 WALL
(REF DART SPEC. M304TR0.500W0.049)
ENSURE SEAMLESS TUBE IS USED
- 3 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III, CLASS 2
COLOR BLACK;
CARDINAL 4860-50 PRETREATMENT PRIMER
PRIME IAW MIL-P-23377J TYPE I CLASS N
4. DEBURR AND BREAK ALL SHARP EDGES
5. WELDS IAW MIL-STD-2219.
TIG WELD WITH FILLER ROD

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 155269 MWS

17-01-12

DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☐ BOM

CHANGE CATEGORY

☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED

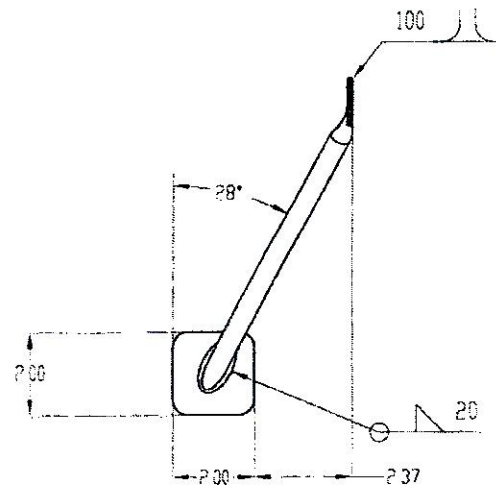
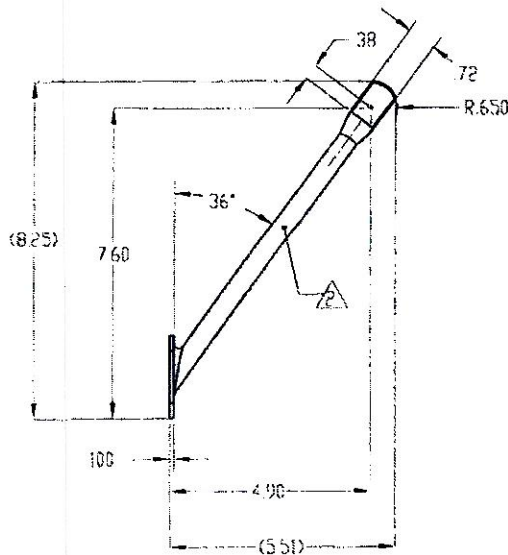
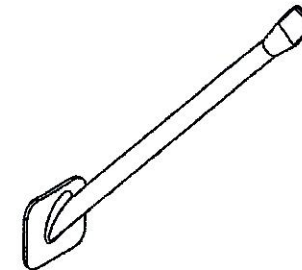
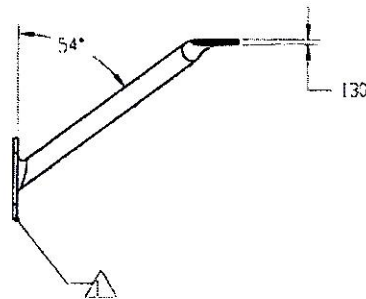
☐ YES ☒ NO

APICAL
INDUSTRIES, INC.

ENGINEERING CHANGE NOTIC. NO. 02440		SHEET 1 OF 1	
DWG NO. 646.3500	REV: NC	PREPARED BY S. HUFF	DATE 06/08/09
DWG TITLE: STRUT		EFFECT ON DWG ☐ INC. ☒ UNINC.	
APPROVED BY: ENGR [Signature]	MFG [Signature]	QC [Signature]	EFF: CURRENT ORDER AND STOCK
REASON: REVISED GEOMETRY TO ACCOMMODATE NEW EXISTING AIRCRAFT PROVISIONS			

TRANSACTION CODES (TC)
A-ADD C-CREATE
R-REVISE D-DELETE

SHEET 2 IS:



DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRUC ☐ ICA ☐ FMS ☐ BOM

CHANGE CATEGORY
☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED
☐ YES ☒ NO

APICAL
INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.

02197

SHEET 1 OF 1

DWG NO. 646.3500

REV: N/C

PREPARED
BY

S. HUFF

DATE: 01/05/09

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE:

STRUT

APPROVED BY:

ENGR

MFG

QC

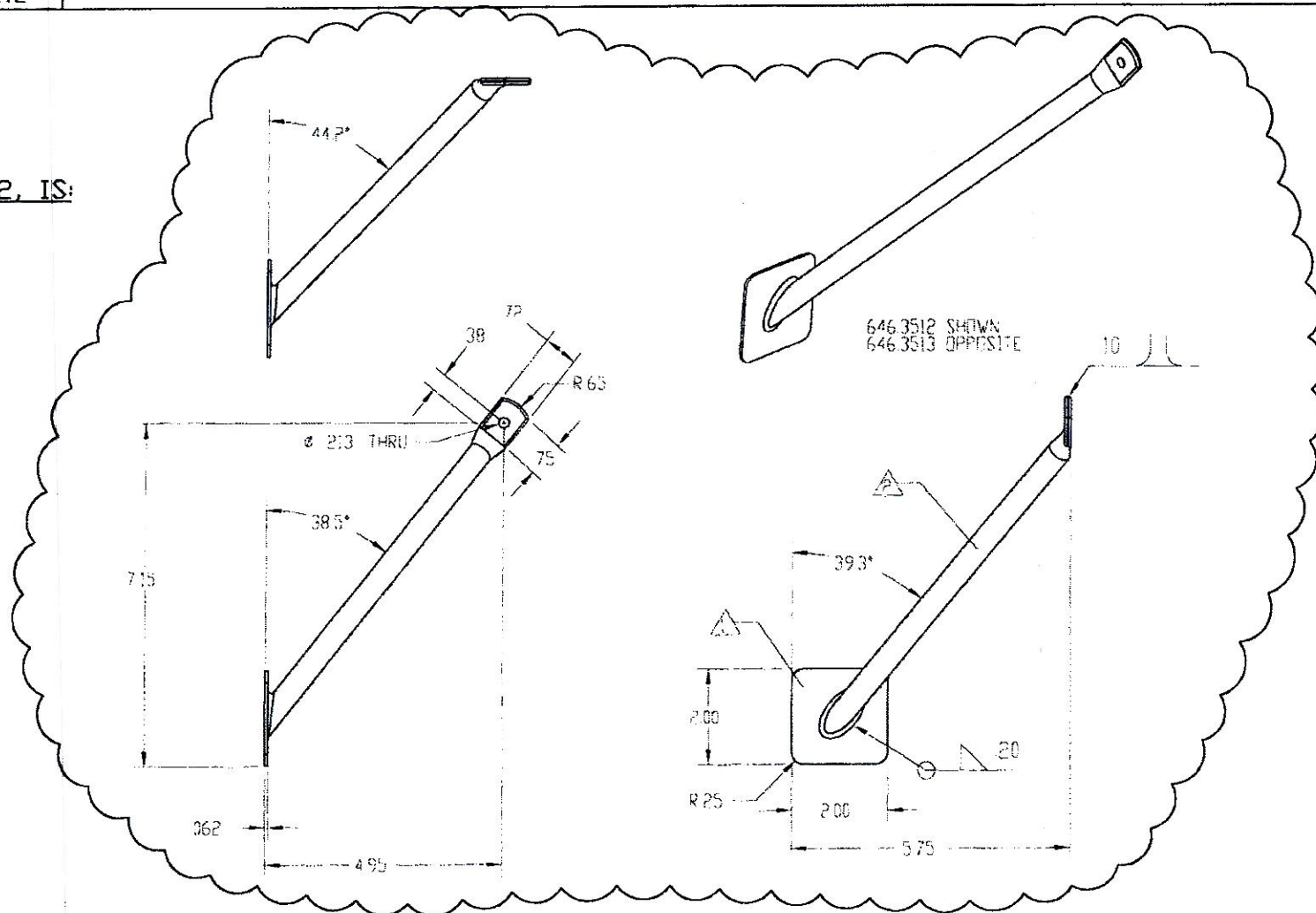
EFF:

NEXT ORDER

TRANSACTION CODES (TC):
A-ADD C-CREATE
R-REVISE D-DELETE

REASON: REVISED ANGLE OF 646.3512 & 646.3513 FOR BETTER FITMENT

SHEET 2, IS:



DOCUMENTS EFFECTED:

☐ MDL ☐ INSTALL INSTRU ☐ ICA ☐ FMS ☐ BOM

CHANGE CATEGORY
☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED
☐ YES ☒ NO

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REV	DESCRIPTION	DATE	APPROVED

NOTES:

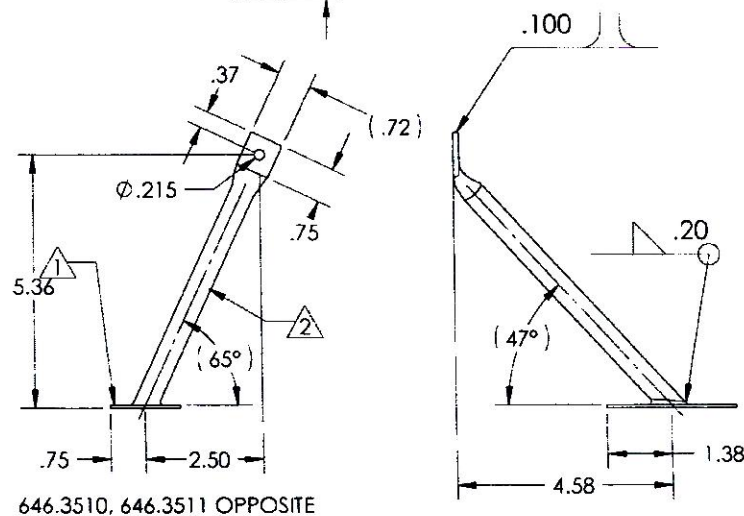
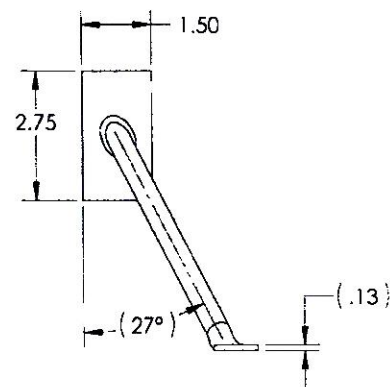
1 MATERIAL: 6061-T6 ALUMINUM IAW AMS-QQ-A-250/11;
.062" THK.

2 MATERIAL: 6061-T6 ALUMINUM IAW AMS-WW-T-700/6
.500" OD; .062" WALL THK

3 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III, CLASS 2
COLOR BLACK;
CARDINAL 4860-50 PRETREATMENT PRIMER
PRIME IAW MIL-P-23377J TYPE I CLASS N

4. DEBURR AND BREAK ALL SHARP EDGES

5. WELDS IAW MIL-STD-2219.
TIG WELD WITH FILLER ROD



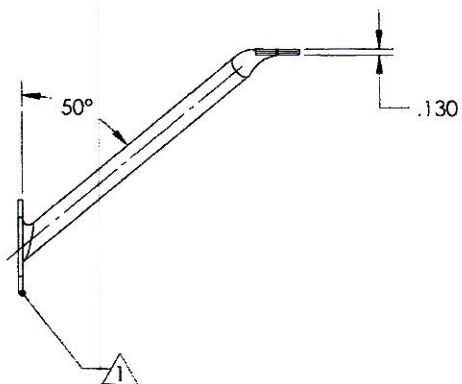
646.3510 SHOWN
646.3511 OPPOSITE

UNINCORPORATED ECN(s)

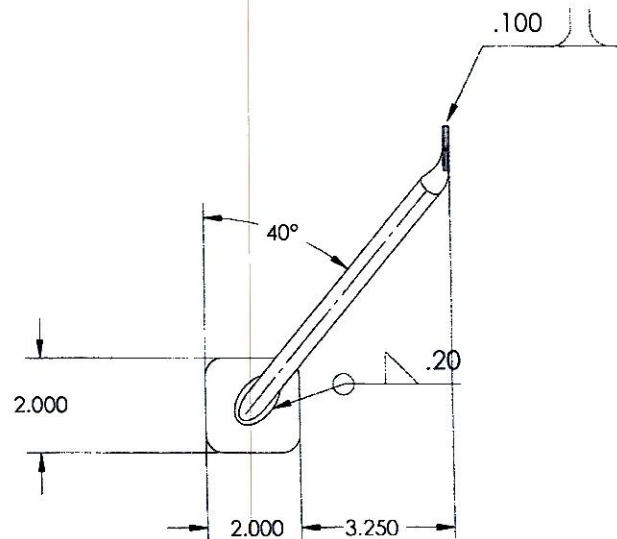
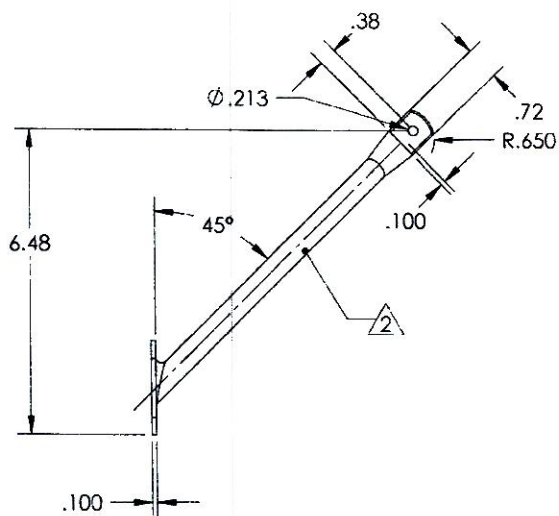
02197, 02440, 04274

		646.3513	STRUT	△△	△
		646.3512	STRUT	△△	△
		646.3511	STRUT	△△	△
		646.3510	STRUT	△△	△
	FIND #	PART #	DESCRIPTION	MAT'L	SPEC
PARTS LIST					
APICAL INDUSTRIES					
2608 TEMPLE HEIGHTS DR.					
OCEANSIDE, CA 92056-3512 (760)724-5300					
STRUT					
ORIGINAL: DWG DATE: 10-27-88 DRAWN BY: J. HANCOCK CHECKED BY: J. HANCOCK SCALE: 1"=1'-0" SHEET: 1 OF 2 CONTACT: 110 65					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS = .015 3 PLACE DECIMALS = .005 4 PLACE DECIMALS = .0015 5 PLACE DECIMALS = .0005 SEE EACH CODE DWG NO 8 07M16 SCALE NONE 646.3500 REV INT.					
SHEET 1 OF 2					

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646.3512 SHOWN
646.3513 OPPOSITE



ORIGINAL DATE MODIFIED DATE DRAWN BY E. ANDERSON / P. BRANC DRAWING APPROVAL P. BRANC 06/23/05 COMPACTING				APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMALS ARE 2 PLACE DECIMALS 3 PLACE DECIMALS 4 PLACE DECIMALS 5 PLACE DECIMALS 6 PLACE DECIMALS 7 PLACE DECIMALS 8 PLACE DECIMALS 9 PLACE DECIMALS 10 PLACE DECIMALS 11 PLACE DECIMALS 12 PLACE DECIMALS 13 PLACE DECIMALS 14 PLACE DECIMALS 15 PLACE DECIMALS 16 PLACE DECIMALS 17 PLACE DECIMALS 18 PLACE DECIMALS 19 PLACE DECIMALS 20 PLACE DECIMALS 21 PLACE DECIMALS 22 PLACE DECIMALS 23 PLACE DECIMALS 24 PLACE DECIMALS 25 PLACE DECIMALS 26 PLACE DECIMALS 27 PLACE DECIMALS 28 PLACE DECIMALS 29 PLACE DECIMALS 30 PLACE DECIMALS 31 PLACE DECIMALS 32 PLACE DECIMALS 33 PLACE DECIMALS 34 PLACE DECIMALS 35 PLACE DECIMALS 36 PLACE DECIMALS 37 PLACE DECIMALS 38 PLACE DECIMALS 39 PLACE DECIMALS 40 PLACE DECIMALS 41 PLACE DECIMALS 42 PLACE DECIMALS 43 PLACE DECIMALS 44 PLACE DECIMALS 45 PLACE DECIMALS 46 PLACE DECIMALS 47 PLACE DECIMALS 48 PLACE DECIMALS 49 PLACE DECIMALS 50 PLACE DECIMALS 51 PLACE DECIMALS 52 PLACE DECIMALS 53 PLACE DECIMALS 54 PLACE DECIMALS 55 PLACE DECIMALS 56 PLACE DECIMALS 57 PLACE DECIMALS 58 PLACE DECIMALS 59 PLACE DECIMALS 60 PLACE DECIMALS 61 PLACE DECIMALS 62 PLACE DECIMALS 63 PLACE DECIMALS 64 PLACE DECIMALS 65 PLACE DECIMALS 66 PLACE DECIMALS 67 PLACE DECIMALS 68 PLACE DECIMALS 69 PLACE DECIMALS 70 PLACE DECIMALS 71 PLACE DECIMALS 72 PLACE DECIMALS 73 PLACE DECIMALS 74 PLACE DECIMALS 75 PLACE DECIMALS 76 PLACE DECIMALS 77 PLACE DECIMALS 78 PLACE DECIMALS 79 PLACE DECIMALS 80 PLACE DECIMALS 81 PLACE DECIMALS 82 PLACE DECIMALS 83 PLACE DECIMALS 84 PLACE DECIMALS 85 PLACE DECIMALS 86 PLACE DECIMALS 87 PLACE DECIMALS 88 PLACE DECIMALS 89 PLACE DECIMALS 90 PLACE DECIMALS 91 PLACE DECIMALS 92 PLACE DECIMALS 93 PLACE DECIMALS 94 PLACE DECIMALS 95 PLACE DECIMALS 96 PLACE DECIMALS 97 PLACE DECIMALS 98 PLACE DECIMALS 99 PLACE DECIMALS 100 PLACE DECIMALS				STRUT 646.3500 SCALE NONE SHEET 2 OF 2			